

REMARKS

Counsel wishes to acknowledge with appreciation the interview with the Examiner on January 26, 2007.

This Amendment addresses the issues outstanding from the final Office Action dated August 10, 2006, and is being presented in light of the interview. The substance of the interview is incorporated in these Remarks.

By this Amendment, independent Claims 1, 13, and 17 have been amended as discussed further below. Claims 2-3 and 40-41 have been cancelled. Accordingly, Claims 1, 4-14, 17-21, and 42-48 are pending for further consideration, with 1, 13, and 17 being independent.

In the final Office Action, each of independent Claims 1 and 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee (US 2003/0008493) in view of Ko (US 2004/0067658). Independent Claim 17 was rejected under 35 U.S.C. § 102(e) as being anticipated by Lee. Without acceding to these rejections, the claims have been further amended in an effort to advance the prosecution.

Claim 1 has been amended to incorporate the features of Claims 2 and 3 (now cancelled) as well as to add a further limitation regarding the thickness of the second barrier insulating film. Claim 1 was previously amended to recite that a barrier property of a material constituting the first

barrier insulating film to copper is larger than that of a material constituting the second barrier insulating film, and also to recite that the material constituting the second barrier insulating film has a greater adhesiveness than the material constituting the first barrier insulating film to a material constituting the second insulating film. As presently amended, Claim 1 now additionally recites that the thickness of the first barrier insulating film is greater than that of the second barrier insulating film, that the thickness of the first barrier insulating film is 40 nm or less, and that the thickness of the second barrier insulating is 10 nm or less. The presently added features of Claim 1 find exemplary support at page 28, lines 10-19 of the specification and, as discussed there, offer significant practical advantage in terms of securing a high barrier effect to copper, high adhesiveness of the second barrier insulating film to the second insulating film, and reduced capacitance between wirings.

Certain deficiencies of Lee were discussed in Applicants' previous Amendment. Significantly, and as was particularly emphasized at the interview, Lee does not teach or suggest the claimed feature wherein the material of the second barrier insulating film has a greater adhesiveness than the material of the first barrier insulating film to a

material of the second insulating film. As such, Lee does not teach or suggest a particular combination of materials as would be required to achieve the claimed barrier and material adhesiveness relationships set forth in Applicants' Claim 1.

Lee is further deficient with respect to the newly added features regarding the relative thickness relationship and the actual thicknesses of the first and second barrier insulating films. Note that Lee's Fig. 2F shows sealing layer 270 as having a greater thickness than the underlying adhesion layer 260. This should be contrasted with the invention of Claim 1, wherein the first barrier insulating film has a greater thickness than the second barrier insulating film. Further, while Lee discloses generally that layer 260 has a thickness of about 200 to 500 angstroms and that layer 270 has a thickness of about 200 to 800 angstroms, he does not actually teach any arrangement in which the thickness of layer 260 is greater than that of layer 270. And, in any event, Lee clearly fails to teach or suggest the claimed arrangement wherein the thickness of the first barrier insulating film is greater than that of said second barrier insulating film, the thickness of the first barrier insulating film is 40 nm or less, and the thickness of said second barrier insulating is 10 nm or less. Indeed,

the claimed second barrier film thickness (10 nm or less) is well below the lower end (200 angstroms (20 nm)) of the aforementioned thickness ranges disclosed in Lee.

Ko's cited teaching of a low-k insulating film 34 fails to overcome the aforementioned deficiencies of Lee vis-à-vis Applicants' invention as now set forth in Claim 1. Nor do the additional teachings of Hironaga et al.

(US 2003/01703671), cited in connection with dependent Claims 9 and 45.

Claim 1 therefore clearly distinguishes patentably from the applied references and should now be allowed. The dependents of Claim 1 should also be allowed, at least for the same reasons.

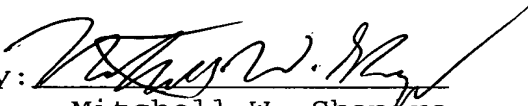
Each of independent Claims 13 and 17 has been amended to incorporate the features of Claims 40 and 41 (now cancelled) and additionally to recite that the thickness of the third insulating film is 10 nm or less. Claims 13 and 17, and their respective dependents, thus distinguish patentably from the applied references at least for reasons similar to those discussed above in connection with Claim 1.

In view of the amendments and discussion above, this application is believed to be clearly in condition for allowance.

Applicants therefore respectfully request that the application be promptly passed to issue.

The Commissioner is hereby authorized to charge to Deposit Account No. 50-1165 any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been requested separately, such extension is hereby requested.

Respectfully submitted,

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